Application No. : 10/676,534
Preliminary Amdt. Dated : November 4, 2005

Amendments To The Claims

The listing of claims replaces all prior versions and listings of claims. Only those claims being amended herein show their changes in highlighted form, where insertions appear as underlined text (e.g., insertions) while deletions appear as strikethrough text (e.g., ~~deletions~~).

1. (Original) A method of reducing an effect of unwanted signal portions from one or more signals usable to determine a physiological characteristic of pulsing blood, the method comprising:

receiving first and second intensity signals from light-sensitive detector which detects light of at least first and second wavelengths attenuated by body tissue carrying pulsing blood, wherein the first and second intensity signals each include wanted and unwanted signal portions;

shaping at least some of the unwanted signal portions away from wanted frequencies;

removing at least some of the shaped unwanted signal portions; and

calculating a physiological characteristic of the pulsing blood from at least one of the wanted signal portions of the first and second intensity signals.

2. (Original) The method of Claim 1, wherein a noise shaping converter shifts the unwanted signal portions.

3. (Original) The method of Claim 2, wherein the noise shaping converter comprises a delta sigma converter.

4. (Original) The method of Claim 3, wherein the delta sigma converter comprises a single channel converter.

5. (Original) The method of Claim 3, wherein the delta sigma converter comprises a dual channel converter.

6. (Original) The method of Claim 1, wherein the physiological characteristic comprises oxygen saturation of the pulsing blood.

7. (Original) The method of Claim 1, wherein the physiological characteristic comprises a pulse rate of the pulsing blood.

8. (Original) The method of Claim 1, wherein the physiological characteristic comprises a plethysmographic waveform.

9. (Original) The method of Claim 1, wherein the shaping of the at least some of the unwanted signal portions away from the wanted frequencies further comprises shifting the at least some of the unwanted signal portions to higher frequencies.

10. (Original) A physiological monitor which uses a noise shaping converter to remove unwanted portions of signals usable to determine one or more physiological characteristics, the physiological monitor comprising:

at least one conductive element which receives first and second intensity signals from light-sensitive detector which detects light of at least first and second wavelengths attenuated by body tissue carrying pulsing blood, wherein the first and second intensity signals each include wanted and unwanted signal portions;

a noise shaping converter which shapes at least some of the unwanted signal portions away from unwanted frequencies;

means for removing at least some of the shifted unwanted signal portions; and

means for calculating a physiological characteristic of the pulsing blood from at least one of the wanted signal portions of the first and second intensity signals.

11. (Original) The method of Claim 10, wherein the noise shaping converter comprises a delta sigma converter.

12. (Original) The method of Claim 11, wherein the delta sigma converter comprises a single channel converter.

13. (Original) The method of Claim 11, wherein the delta sigma converter comprises a dual channel converter.

14. (Original) The method of Claim 10, wherein the physiological characteristic comprises oxygen saturation of the pulsing blood.

15. (Original) The method of Claim 10, wherein the physiological characteristic comprises a pulse rate of the pulsing blood.

16. (Original) The method of Claim 10, wherein the physiological characteristic comprises a plethysmographic waveform.

17. (Original) The method of Claim 10, wherein the noise shaping converter shapes the unwanted signal portions by shifting the at least some of the unwanted signal portions to higher frequencies.

18. (New) A method of processing physiological signals in a pulse oximeter, the method comprising:

receiving first and second intensity signals from a light-sensitive detector which detects light of at least first and second wavelengths attenuated by body tissue carrying pulsing blood;

processing the intensity signals with a delta-sigma converter; and

calculating a physiological characteristic of the pulsing blood from the first and second intensity signals.

19. (New) The method of Claim 18, wherein the intensity signals each include wanted and unwanted signal portions.

20. (New) The method of Claim 19, wherein the delta signal converter shifts the unwanted signal portions.

21. (New) The method of Claim 19, wherein the unwanted signal portions comprise motion induced noise.

22. (New) The method of Claim 19, wherein the delta signal converter shapes at least some of the unwanted signal portions by shifting the at least some of the unwanted signal portions to higher frequencies.

23. (New) The method of Claim 18, wherein the delta sigma converter comprises a single channel converter.

24. (New) The method of Claim 18, wherein the delta sigma converter comprises a dual channel converter.

25. (New) The method of Claim 18, wherein the physiological characteristic comprises oxygen saturation of the pulsing blood.

26. (New) The method of Claim 18, wherein the physiological characteristic comprises a pulse rate of the pulsing blood.

27. (New) The method of Claim 18, wherein the physiological characteristic comprises a plethysmographic waveform.

28. (New) A method of determining blood oxygen saturation of pulsing blood, the method comprising:

receiving a plurality of intensity signals from a light-sensitive detector over a first period of time, wherein the light-sensitive detector detects light of a plurality of wavelengths attenuated by body tissue carrying pulsing blood; and

reducing an impact of the intensity signals over the first period of time on a calculation of saturation based upon an assumption that oxygen saturation of pulsing blood remains relatively constant over a predetermined portion of the first period of time.

29. (New) The method of Claim 28, wherein the plurality of intensity signals include motion induced noise.

30. (New) The method of Claim 28, wherein the calculation is limited when the saturation varies beyond a predetermined threshold, based, at least in part, on physiological limits.

31. (New) A method of determining blood oxygen saturation of pulsing blood, the method comprising:

receiving a plurality of intensity signals from a light-sensitive detector over a period of time, wherein the light-sensitive detector detects light of a plurality of wavelengths attenuated by body tissue carrying pulsing blood; and

calculating a first indication of blood oxygen saturation for a first portion of the period of time;

calculating a second indication of blood oxygen saturation for a second portion of the period of time; and

reducing an effect of the intensity signals during the second portion of the period of time on a final indication of oxygen saturation depending upon the amount of variation between the first indication and the second indication.

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32. (New) The method of Claim 31, wherein the plurality of intensity signals include motion induced noise.

33. (New) The method of Claim 31, wherein the final indication of oxygen saturation is clipped to a physiologically limited variation from the first indication, when the second indication varies beyond a predetermined threshold.

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